Retroreflectivity --rolls right off your tongue, doesn't it? Why such a complicated word when you could just say “reflectivity?” Well, because they're not the same.

For many, the figures at right help demystify this cumbersome word that we in the transportation arena have begun to hear at every turn. For our purposes, light can reflect in three primary ways. The first is the very familiar mirror reflection --if we look direct perpendicular at the mirror surface we see ourselves, but if we look at an angle, we see those objects to the left or the right, up or down.

Diffuse reflection is a phenomenon of light when it hits a matte or dull or other less than reflective surface and, instead of reflecting, tends to scatter or diffuse. Neither of these reactions is helpful to us for seeing traffic signs at night. That's why sign sheeting materials are designed to be retroreflective, wherein the light source (in this case, from our headlights) is reflected back along the same axis with a minimum of scattering. This allows the sign to be located safely out of the line of travel and yet be visible at night.

So, while the misuse of the term reflection is understandable and, at best, a misdemeanor, the difference is real and it does matter.
The Federal Highway Administration (FHWA) has enacted changes to the Manual on Uniform Traffic Control Devices (MUTCD) that require new retroreflectivity (a measure of a sign's ability to be read by sensitive driving populations during nighttime and other non-optimal conditions) maintenance standards for signs. Since the MUTCD applies to “any street, highway, or bicycle trail open to public travel,” local governments should begin preparing for compliance and Arizona LTAP can help by providing technical assistance and equipment to help you.

To comply with the new requirements, public agencies have until January 2012 to implement and continue to use an assessment or management method that is designed to maintain traffic sign retroreflectivity at or above the minimum levels specified. As the insert describes (and as the sign retroreflectivity workshop discusses), there are a number of ways that this can be accomplished. One of the tools that can play a key role in implementing one of these methods is a sign retroreflectometer. To help local agencies that cannot afford or justify purchasing their own sign reflectometer, AZ LTAP, in partnership with AZ Division FHWA purchased a retroreflectometer which is available for loan for up to two weeks to Arizona local governments.

The retroreflectometer is a RETROSIGN 4500 with GPS capability. An extension pole is used to extend the operators reach an additional nine feet and includes a remote trigger with digital display, allowing the operator to take multiple readings without having to retract the pole each time.

To borrow AZ LTAP's retroreflectometer, simply complete the Equipment Loan Agreement form and call 602-712-4050 to reserve it on the calendar.
The Sign Retroreflectivity Toolkit provides information that will assist small and medium sized agencies without traffic engineering staff to meet the new Federal requirements for maintaining traffic sign retroreflectivity. This toolkit contains two documents. One is a stand-alone computer based package on a compact disc (called the "Toolkit") that contains much more information, resources, and automated features. The second document is a hard copy of the computer-based package known as the "Guidebook." These documents are designed to assist small and medium sized agencies in making informed decisions before implementing a retroreflectivity maintenance program while considering resource limitations. The two documents include common features such as:

- Inspection procedures.
- Budget estimating tool.

Adequately maintained traffic signs and pavement markings help improve highway safety, especially during the nighttime. The retroreflective properties of traffic signs bounce light from vehicle headlights back toward the vehicle and the driver's eyes, making the signs appear brighter and easier to see and read at night. Because the retroreflective properties of traffic control devices deteriorate over time, agencies need to manage the maintenance of their signs and pavement markings.

Recent retroreflectivity standards are set forth in the Manual on Uniform Traffic Control Devices (MUTCD) and compliance dates are coming up soon. Did you know that by January of 2012, all agencies must implement a sign maintenance program that addresses the nighttime visibility of their signs? This Toolkit is geared to help and it is FREE.

Visit www.fhwa.dot.gov/retro for more information.

ORDER YOUR FREE COPY TODAY

Contact: FHWA Report Center at Report.center@fhwa.dot.gov or call 814-239-1160 and request publication number FHWA-CFL/TD-09-005

RETROREFLECTIVITY VIDEO TRAINING RESOURCE

Title: Night Light: How Retroreflectivity Makes Our Roads Safer

This 10 minute video explains the benefits of retroreflectivity and provides a range of scenarios to help illustrate the necessity of this important roadway feature. This video also describes the technology involved in the retroreflectivity process in easy-to-understand, non-technical terms. Publisher: FHA; ATSSA

To borrow this from the AZ LTAP Library, complete the Video Library Request Form.

See all titles available at: http://www.azltap.org/Library/Library.html
Retrofit reflectivity issues are a common theme observed by Road Safety Assessment (RSA) teams during their nighttime field reviews. An RSA recommendation to consider upgrading its sign sheeting led the Coconino County Public Works Department to respond that they were already in the process of doing so. Following are numerous examples from Arizona RSAs. To request a free RSA, complete the RSA application that can be found at [http://www3/gtsac/PDF/RSA_Application.pdf](http://www3/gtsac/PDF/RSA_Application.pdf) and submit to Mike Blankenship, RSA Program Manager.
Retroreflectivity Links

Nighttime Visibility
FHWA Safety Program

Learn about nighttime visibility from the FHWA including:

New Sign Upgrade Guide Specifications
- Nighttime Visibility Policy / Guidance
- Sign Visibility
- Pavement Markings Visibility

http://safety.fhwa.dot.gov/roadway_dept/night_visib

Sign Visibility
FHWA Safety Program

Learn everything there is to know about Sign Visibility from the FHWA, including:

- Training Courses


Conducting Sign Retroreflectivity Inspections focuses on assessment techniques for conducting sign maintenance inspections to evaluate retroreflectivity.

Training Courses can be requested through the AZ LTAP On Demand Training Program by completing the On Demand form; submitting it to Annie Parris.

- Technical Guidance

Guide Specification for Sign Replacement Services was developed to assist medium and small agencies by providing an example project to inventory, assess for retroreflectivity, and replace regulatory and warning signs to meet the retroreflectivity standard.

FHWA Retroreflective Sheeting Identification Guide was developed to assist practitioners in selecting retroreflective sheeting materials. The table provides information about the typical uses of various retroreflective sheeting materials, by ASTM type, manufacturer, brand name and series number.


- Research

- Minimum Retroreflectivity levels for Blue and Brown Traffic Signs
- Minimum Retroreflectivity Levels for Overhead Guide Signs and Street-Name Signs
- Updated Minimum Retroreflectivity levels for Traffic Signs
- Maintaining Traffic Sign Retroreflectivity: Impacts on State and Local Agencies

http://safety.fhwa.dot.gov/roadway_dept/night_visib/sign_visib/